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# Self-gravitating scalar field with cubic nonlinearity

Ivanov G.
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

## Abstract

For a self-gravitating massless conformally invariant scalar field a solution is obtained to the Einstein equations for which the geometry of space-time remains arbitrary. For a scalar field with cubic nonlinearity, a static solution to the Einstein equations possessing plane symmetry is found. A cosmological model with nonlinear scalar field in the class of conformally flat Friedmann metrics is investigated. An example is given of an exact solution to the equations of the gravitational field with singularity in the infinite past. © 1981 Plenum Publishing Corporation.

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